CLAIMS

What is claimed is:

1. A vehicle horn activation system comprising:
   a. An activation surface for receiving contact by a user to activate a horn;
   b. A ferromagnetic element mechanically coupled to the activation surface;
   c. A magnetostrictive sensor coupled to the ferromagnetic element and generating a signal based upon stress in the ferromagnetic element caused by contact on the activation surface; and
   d. A horn switch activated based upon the signal from the magnetostrictive sensor.

2. The vehicle horn activation system of claim 1 further including a horn activated based upon the activation of the horn switch.

3. The vehicle horn activation system of claim 1 wherein the magnetostrictive sensor further includes an excitation coil generating an acoustic wave in the ferromagnetic element.

4. The vehicle horn activation system of claim 3 wherein the magnetostrictive sensor further includes a detection coil generating an electrical current based upon the acoustic wave in the ferromagnetic element.

5. The vehicle horn activation system of claim 4 further including a steering wheel, said ferromagnetic element mounted on said steering wheel.

6. The vehicle horn activation system of claim 5 wherein the steering wheel comprises a base generally circumscribed by a steering rim and having a centerpoint about which said steering wheel is rotatable, said ferromagnetic element mounted on said base.

7. The vehicle horn activation system of claim 6 wherein said excitation coil and said detection coil are mounted generally on opposite sides of said centerpoint.

8. The vehicle horn activation system of claim 6 wherein said excitation coil and said detection coil are mounted generally on the same side of said centerpoint.

9. The vehicle horn activation system of claim 5 wherein said ferromagnetic element is generally planar and at least one of said detection coil and said excitation coil are coiled around at least a portion of said ferromagnetic element.

10. The vehicle horn activation system of claim 9 wherein each of said detection coil and said excitation coil are coiled around at least a portion of said ferromagnetic element.

11. The vehicle horn activation system of claim 4 wherein said detection coil and said excitation coil are both coiled around a single ferrite core.

12. A system for measuring a weight upon a seating surface, said system comprising:

at least one ferromagnetic element mechanically coupled between the seating surface and a vehicle floor such that strain is induced in said at least one ferromagnetic element responsive to the weight thereon; and

a first sensor comprising (i) a magnet generating a magnetic field and (ii) an inductor, said magnet and inductor mounted adjacent said ferromagnetic element, said magnetic field altered by said strain in said ferromagnetic element, said inductor generating a signal based upon the alteration in said magnetic field.

13. The system of claim 12 wherein said at least one ferromagnetic element is a plurality of ferromagnetic elements, which together receive all of the weight on the seating surface.

14. The system of claim 12 wherein said seating surface is on a seat and said at least one ferromagnetic element is coupled between a vehicle floor and a bracket on said seat.

15. The system of claim 14 wherein said at least one ferromagnetic element is coupled directly between the vehicle floor and the bracket on said seat.

16. The system of claim 14 further including a fastener connecting the seat to the floor through said at least one ferromagnetic element.

17. The system of claim 12 wherein said at least one ferromagnetic element receives all of the weight on the seating surface.

18. The system of claim 17, wherein said magnet is an electromagnet and said inductor includes a coil.

19. The system of claim 18, further including an actuator for a vehicle safety device, said actuator actuating said vehicle safety device based upon said signal from said first sensor.

20. A vehicle switching system comprising:
    a. A first activation surface for receiving force by a user to activate a first vehicle function; and
    b. A magnetostrictive sensor coupled to the activation surface and generating a first signal based upon force applied to the first activation surface, said first signal activating said first vehicle function.

21. The vehicle switching system of claim 20 wherein the first vehicle function is a vehicle horn.

22. The vehicle switching system of claim 20 further including a ferromagnetic element including a first portion mechanically coupled to said first activation surface.

23. The vehicle switching system of claim 22 wherein said ferromagnetic element further includes a second portion mechanically coupled to a second contact surface, said magnetostrictive sensor generating a second signal based upon force applied to said second contact surface, said second signal activating a second vehicle function different from said first vehicle function.

24. The vehicle switching system of claim 23 wherein the magnetostrictive sensor further includes an excitation coil generating an acoustic wave in the ferromagnetic element.

25. The vehicle switching system of claim 24 wherein the magnetostrictive sensor further includes a detection coil generating an electrical current based upon the acoustic wave in the ferromagnetic element.

26. The vehicle switching system of claim 24 further including a steering wheel, said ferromagnetic element mounted on said steering wheel.

27. The vehicle switching system of claim 20 further including a first ferromagnetic portion coupled to said first activation surface and a second ferromagnetic portion coupled to a second activation surface, said magnetostrictive sensor generating a second signal based upon force applied to said second contact surface, said second signal generating a second vehicle function different from said first vehicle function.

28. The vehicle switching system of claim 27 wherein the magnetostrictive sensor includes an excitation coil and a detection coil generating said first and second signals.

29. The vehicle switching system of claim 27 further including a ferromagnetic element comprising the first and second ferromagnetic portions.

30. A method for activating a switch including the steps of:

a) measuring a strain in a first element;

b) activating a first vehicle function based upon said step a).

31. The method of claim 30 further including the steps of:

c) measuring strain in a second element;

d) activating a second vehicle function based upon said step c).

32. The method of claim 31 wherein said step a) is performed utilizing a magnetostrictive sensor.

33. The method of claim 32 wherein said step c) is performed using said magnetostrictive sensor.